

A LABYRINTHODONT TRACKWAY FROM THE MID-TRIASSIC NEAR SYDNEY, NEW SOUTH WALES

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[Accepted for publication 24th October, 1973]

Synopsis

A recently discovered trackway of a large Mid-Triassic Labyrinthodont is described. Notable features of the trackway are the length (22 sequential imprints) and that the digits are laterally directed, suggesting a primitive stance.

INTRODUCTION

In July 1970, workmen digging a sewerage tunnel at Macquarie Fields, New South Wales, discovered what appeared to be footprints on the tunnel roof. The authors visited the site and ascertained 22 definite imprints constituting an excellent trackway made by a large Middle Triassic quadruped, probably a labyrinthodont amphibian. Because of its length and some unusual features, the trackway is of particular interest and warrants description.

METHOD OF STUDY

As the roof of the tunnel was soon to be concreted over, an accurate photographic record was made. The roof was divided into sections with chalk-marks and each section numbered. A series of photographs was then taken with oblique illumination to emphasize the relief of the individual footprints. A scale was included in each photograph. A photo-montage was then built up to represent the whole trackway and each imprint given a number. From this montage, a drawing was produced (Fig. 1). Scale measurements were made from a tracing of the montage and these dimensions are displayed in Table 1.

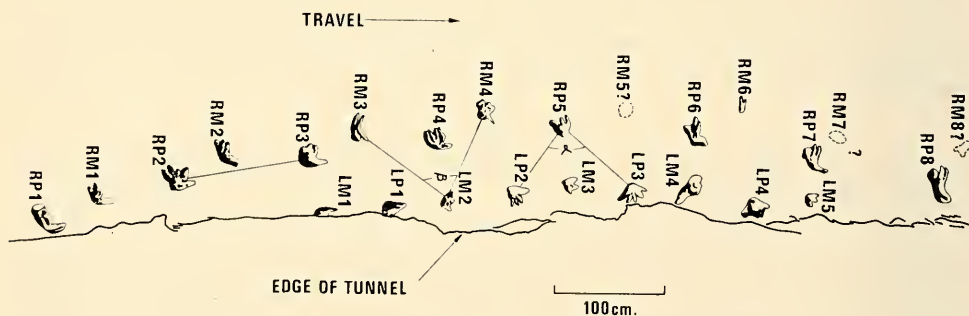


Fig.1. Scale diagram of the Labyrinthodont trackway.

DESCRIPTION

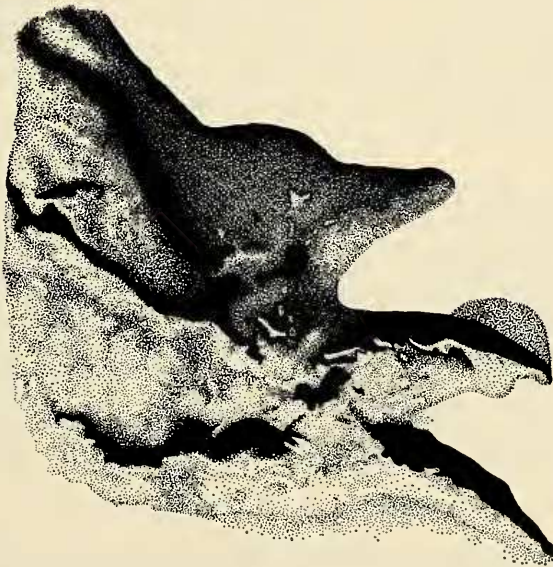
The trackway was in the Ashfield shales at the base of the Wianamatta Group, of Mid-Triassic age. It consisted of a series of casts of prints made in the underlying shale which had been removed during excavation of the tunnel. The trackway emerged from the unexcavated section of the roof and was exposed for three full strides before disappearing again (Fig. 1). The visible trackway consisted of casts as follows : eight right pes, eight right manus (three indistinct),

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10 cm

(a)



10 cm

Fig. 2. (a) Right manus ^(b)(RM 2). (b) Left pes (LP 2).

TABLE 1
*Dimensions of Trackway**
 (Length measurements in centimetres)

	Mean	Range	
Stride {	Right manus	117	113-122
	Left manus	111	106-114
	Right pes	115	111-119
	Left pes	112	109-114
	(Mean stride)	114)	
Trackway width	80		
Manus pace	94	84-101	
Pes pace	74	63-81	
Manus pace angulation	77°	73°-85°	
Pes pace angulation	99°	94°-107°	
Gleno-acetabular length	106		

* The reference point for measurements of length was taken as the base of the second outermost digit of both manus and pes.

four left pes, and five left manus. There were no signs of tail or body drag marks. Of particular interest is the lateral direction of the digits of both pes and manus from the axis of travel!

Dimensions that could be ascertained are given in Table 1. Gleno-acetabular length was determined by geometry to be 106 centimetres.

Prints RM2 and LP2 were the best preserved of manus and pes respectively. These are illustrated in Fig. 2. The manus appears to have three digits, the pes four. Most impressions have a ridge extending anteriorly which probably indicates a drag mark made during protraction of the limb. Unfortunately, these marks could have obscured an extra digit if it were present. The drag marks are more pronounced in those imprints made by right pes and right manus, probably because the animal was making a slow left turn. Webbing between digits is not indicated in either pes or manus, except for a slight suggestion of a membrane between the third and fourth digits in LP2, LP3, LP4, RP6, RP7 and RPS.

DISCUSSION

Because of the pace angulation and the angle of the digits, and because the only tetrapods known from this formation are amphibians, the trackmaker was probably a large Labyrinthodont. If so, then the gleno-acetabular length of 106 centimetres is consistent with a total length of about three metres. The laterally directed digits of pes and manus indicate a primitive stance close to that proposed by Morton (1926) as the likely stance for primitive tetrapods. Only one other trackway has been described with this primitive feature, an upper Devonian record from Victoria, Australia (Warren and Wakefield, 1972). Absence of marks indicating body or tail drag suggests either that the animal may have been wading through a shallow billabong or marsh with body weight partly supported by water or that the animal was capable of walking with its body clear of the ground.

ACKNOWLEDGEMENTS

We are grateful to personnel from the Metropolitan Water, Sewerage and Drainage Board for drawing our attention to their discovery. Advice and help from Dr. Anne Warren is gratefully acknowledged. Mr. David Stanley prepared the diagrams.

References

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 WARREN, J. W., and WAKEFIELD, N. A., 1972.—Trackways of tetrapod vertebrates from the Upper Devonian of Victoria, Australia. *Nature*, 238 : 469-470.